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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,720	02/16/2005	Yoshitsugu Nishi	SHM-15906	8388
40854 7590 07/14/2009 RANKIN, HILL, & CLARK LLP 38210 Glenn Avenue WILLOUGHBY, OH 44094-7808				
EXAMINER				
CRUPEAU, JONATHAN				
ART UNIT		PAPER NUMBER		
1795				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/524,720

Applicant(s)

NISHI ET AL.

Examiner

Jonathan Crepeau

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4, 11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4, 11 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office action addresses claim 4 and newly added claims 11 and 12. The 35 USC 112 second paragraph rejection of claim 1 (which was previously intended to be a rejection of claim 4) is withdrawn. Claims 4, 11, and 12 are newly rejected under 35 USC 103, as necessitated by amendment. Further, claim 11 is newly rejected under 35 USC 112 first paragraph. Accordingly, this action is made final.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 11 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 11 has been amended to recite that the proportion of the glass or carbon fiber is "between 8 to 10wt%." It is submitted that the application as originally filed does not provide adequate support for the claimed lower endpoint of 8%. There is no explicit disclosure of this value, and it is submitted that Applicants did not originally envision the range of 8-10 wt% as being part of the invention. Accordingly, claim 11 is considered to contain new matter.

Claim Rejections - 35 USC § 103

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-25571. Saito et al (US 2003/0031912) is taken as an English equivalent of JP '571 herein.

Saito et al '912 teaches a fuel cell separator comprising 100 weight parts of carbon particles such as graphite or carbon black, 10-50 weight parts of a thermoplastic resin such as ethylene-vinyl acetate copolymer, and 0-10 weight parts of a carbon fiber or glass fiber (see [0030], [0034], [0037]). As an example, if the ratio of resin: carbon particles: fiber (in weight parts) of Saito et al. is 20: 100: 5, this would result in a weight percentage ratio of 16: 80: 4.

Saito et al. do not teach an embodiment of the invention that is anticipatory of claim 11, i.e., a separator having a resin content of 14-20 wt%, a carbon particle content of 70-83.5 wt%, and a glass/carbon fiber content of 8-10 wt%. In particular, the reference teaches that the maximum fiber content is 7.8 wt% (10 weight parts) when the resin content is 14 wt% (17.9 weight parts).

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the fiber content disclosed by Saito et al. (a maximum of 7.8 wt%), although not overlapping with the claimed range, is close enough thereto that a skilled artisan would have expected them to have similar properties. A *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties.

Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

Accordingly, the claimed range of 8-10% is rendered obvious by Saito et al.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-25571 in view of Inagaki et al (U.S. Pre-Grant Publication No. 2002/0177030). Saito et al (US 2003/0031912) is taken as an English equivalent of JP '571 herein.

Saito et al '912 teaches a fuel cell separator comprising 100 weight parts of carbon particles, 10-50 weight parts of a thermoplastic resin such as ethylene-vinyl acetate copolymer, and 0-10 weight parts of a carbon fiber or glass fiber (see [0030], [0034], [0037]). The carbon particles may be carbon black, Ketjen black, acetylene black, carbon whisker, graphite, or a combination of these (see [0030]).

Saito et al. do not teach an embodiment of the invention that is anticipatory of the component ranges recited in claim 4, i.e., a separator having a resin content of 14-20 wt%, a carbon particle content of 70-83.5 wt%, and a glass/carbon fiber content of 2.5-10 wt%.

However, such ranges would have been obvious to one of ordinary skill in the art because the claimed ranges overlap with the ranges disclosed by Saito et al. In the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art, a prima facie case of obviousness exists (*In re Wertheim*, 191USPQ 90; *In re Woodruff*, 16 USPQ2d 1934). As an example, if the ratio of resin: carbon particles: fiber (in weight parts) of Saito et al. is 20: 100: 5, this would result in a weight percentage ratio of 16: 80: 4, which falls within the claimed ranges.

Saito et al. further do not expressly teach that the carbon particles comprise 3-20 wt% of Ketjen black, as recited in claim 4.

Inagaki et al. is directed to a fuel cell separator comprising a thermoplastic resin, a graphite, and carbon black (Ketjen black) (see abstract; [0015]). In [0016], it is disclosed that the compounding ratio of the graphite to the carbon black is set to be in the range of 1:1 to 4:1.

Thus, the amount of carbon black relative to all carbon would be in the range of 20-50wt%. Further, Example 3 in Table 1 shows a graphite to carbon black ratio of 64 to 16, which is 20 wt% carbon black.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use a carbon black amount of 20% relative to the total carbon in the separator of Saito et al. In [0016], Inagaki et al. teach that this ratio is preferable because "the lowering of the conductivity can be suppressed in the fuel cell separator as a whole." Accordingly, the artisan would be motivated to use the Ketjen black of Saito et al. in a weight ratio of 20% with respect to the total carbon in the separator plate.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-25571 in view of JP 08-259767. Saito et al (US 2003/0031912) is taken as an English equivalent of JP '571 herein.

Saito et al '912 teaches a fuel cell separator comprising 100 weight parts of carbon particles, 10-50 weight parts of a thermoplastic resin such as ethylene-vinyl acetate copolymer, and 0-10 weight parts of a carbon fiber or glass fiber (see [0030], [0034], [0037]). The carbon particles may be carbon black, Ketjen black, acetylene black, carbon whisker, graphite, or a combination of these (see [0030]).

Saito et al. do not teach an embodiment of the invention that is anticipatory of the component ranges recited in claim 4, i.e., a separator having a resin content of 14-20 wt%, a carbon particle content of 70-83.5 wt%, and a glass/carbon fiber content of 2.5-10 wt%.

However, such ranges would have been obvious to one of ordinary skill in the art because the claimed ranges overlap with the ranges disclosed by Saito et al. In the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art, a prima facie case of obviousness exists (*In re Wertheim*, 191USPQ 90; *In re Woodruff*, 16 USPQ2d 1934). As an example, if the ratio of resin: carbon particles: fiber (in weight parts) of Saito et al. is 20: 100: 5, this would result in a weight percentage ratio of 16: 80: 4, which falls within the claimed ranges.

Saito et al. further do not expressly teach that the thermoplastic resin comprises an ethylene / ethyl acrylate copolymer, as recited in claim 12.

JP '767 is directed to a conductive plastic plate for an electrochemical cell. The plate comprises a polymer selected from among ethylene - vinyl acrylate copolymer and ethylene-ethyl acrylate copolymer and 40-80 wt parts of carbon black (see abstract).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. Further, the abstract of JP '767 teaches that the plastic plate is improved so that it has a high electric conductivity. Accordingly, the artisan would be motivated to use the ethylene-ethyl acrylate copolymer in the plate of Saito et al.

Response to Arguments

7. Applicant's arguments filed April 23, 2009 have been fully considered but they are not persuasive. Regarding claim 11, Applicants state that the Saito reference teaches a maximum of 7.8 wt% fiber and therefore the claimed range of 8-10% distinguishes over the reference. However, the claimed range is considered to contain new matter for the reasons stated above, and additionally, the lower endpoint of 8% is also close enough to 7.8 % that the two values may be expected to have similar properties, thereby rendering obvious the claimed range, as also stated above. Accordingly, Applicant's arguments as they apply to claim 11 are not persuasive.

As a further note, Applicants argues with respect to claim 4 that "Saito does not teach or suggest the use of KETJEN black as a carbon particle." However, Ketjen black is expressly disclosed in paragraph [0030] of the reference. Accordingly, this argument is also not persuasive.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (571) 272-1292. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jonathan Crepeau/
Primary Examiner, Art Unit 1795
July 13, 2009